

however, occurred with a sky apparently pure, or with a very light veil, these globules can not be densely packed, as otherwise they would form a visible mist. This thin distribution explains how, in some cases, the light suffers so little absorption that brilliant rings could be seen around the moon *before sunset* (observation 38). On the other hand, the best displays have been observed to be characterized by a fairly sharp edge to the main ring at least (observations 5, 30, 38, 70, 95), with the exception of the annulus of 99, and diffraction patterns are known to be sharpest when the screening particles are of very uniform size. This condition seems to be difficult of realization in agglomerations of large vesicles of water vapor, while quite possible with very small vesicles. Such homogeneity of size would, moreover, produce several colored rings, while only one could be seen generally. In some cases, two or three rings were observed, but they usually did not extend farther than $1\frac{1}{2}$ to $1\frac{3}{4}$ diameters from the limb of the moon (observations 5, 31, 38, 70, 99, 103). The majority of the annuli observed extended only to about $\frac{1}{2}^\circ$ from the limb, while the coronas are situated at a minimum distance from the limb of $1\frac{1}{2}^\circ$ to 2° . A very few intermediate sizes were observed (observations 71, 103).

THE DUTY OF THE GOVERNMENT TO PROTECT THE PEOPLE FROM SWINDLERS.

Under existing laws of the United States it is not allowable to use the United States mails to promote lotteries or any form of swindling. The public authorities do not wait for the victim to bring suit but do so themselves promptly in the name of the people.

It is the duty of the Editor to call attention to the fact that the folly of any human attempt to make rain or to alter the weather in any way, has been so abundantly demonstrated in this country, in Europe, in Australia, in New Zealand, and elsewhere, that it is high time our law givers made it a penal offense to promise to do this or to secure money under such false pretenses as these promises are.

It is not enough to say that the "operator" makes no promise, that he only experiments and performs and leaves it to the public to draw its own conclusion. The good natured public is willing to give the fakir a dollar and stand by looking on with idle curiosity. The local authorities want a crowd at the county fair and the rain-maker draws, just as did Barnum's wooly horse seventy years ago. Well, put him in a cage and let him draw, but stop this praying and sacrificing, dynamiting, and steaming. Let the deluded ones go elsewhere to spend their money.—C. A.

THE OBSERVATORY ON MOUNT ETNA.

Under the above title in the MONTHLY WEATHER REVIEW for April, 1908, p. 102, we erroneously referred to Prof. G. B. Rizzo, as director of the observatory near the summit of Mount Etna, whereas it is really Prof. Annibale Riccò who is director of the summit observatory and is also director of the astronomical observatory at Catania, the official name of which is Regio osservatorio astronomico ed Etneo.

On the other hand Professor Rizzo, who is director of the observatory of Messina and of the Institute for Terrestrial Physics and Meteorology of the Royal University, at Messina, writes that in studying solar radiation he includes observations with the Ångström electric compensating pyrheliometer both at the Roccamellone and at the summit also, by the kind cooperation of the director Professor Riccò.—C. A.

THE HEAVIEST RAINFALL IN ONE HOUR.

By Prof. A. G. MCADIE. Dated San Francisco, Cal., July 8, 1908.

In connection with the note on a cloudburst near Shasta, Cal., in the MONTHLY WEATHER REVIEW for April, 1908, p. 97, and the article on cloudbursts, by Mr. Edward L. Wells, Sec-

tion Director, Boise, Idaho, in the Year Book for 1906, p. 325, it seems proper to call attention to a well authenticated case of a cloudburst which appears to have been overlooked. At Campo, Cal., August 12, 1891, a rainfall of 292 millimeters in one hour occurred, or at the rate of 4.87 millimeters per minute. This is probably the heaviest rainfall [in one hour] on record. At least it heads the column of heaviest rainfall given by Hann in his *Lehrbuch der Meteorologie*, 2d edition, p. 272.

The details of this cloudburst, and the rainfall measurements, by Mr. Archibald Campbell, of Campo, were sent to the Central Office in a communication previous to the 18th of April, 1906. Unfortunately all of our records have been destroyed. The rate of precipitation is more than twice that given by Mr. Wells, in the Year Book for 1906, in the article on cloudbursts, as occurring at St. Louis, on August 15, 1848. At Campo 11.50 inches (292.1 millimeters) fell in twenty-four hours. This is both the greatest rainfall in twenty-four hours and in one hour.

From the MONTHLY WEATHER REVIEW for August, 1891, we find that this was the heaviest monthly, daily, and hourly rainfall reported during the month of August up to 1891.

Original notes made by S. E. Gaskill, cooperative observer at Campo, Cal., regarding the cloudburst of August 12, 1891.

On the 12th of August had a cloudburst. One heavy thunder-cloud came up and it rained about thirty minutes very hard, raising the water in the streams flood high by the gage. I could not tell [how much water had fallen because] it was running over, emptied it and then another cloud came up and the one that had past over drew back and the two came together and it poured down whole water nearly. I went to the gage again in thirty minutes and it was running over and the reservoir was nearly half full, I emptied it out of the gage and did not stop to measure the reservoir; after the shower was over I went out to measure the water and the gage was gone, carried off by the flood. It was exciting times with us about that time.

The Weather Bureau is not aware of any rainfall in the United States, which has exceeded the above record for one hour at Campo, Cal.—C. A., jr.

STUDIES IN THE FORMATION OF FROST.

By DEWEY A. SEELEY, Observer. Dated Peoria, Ill., May 8, 1908.

For some years past the writer has taken an active interest in temperature variations near the surface of the soil, and in the moisture and temperature conditions which accompany the formation of frost. Over two years ago, January 22, 1906, I enumerated a number of problems which I intended to work upon. They were as follows:

- (1) What becomes of the heat of condensation during the formation of dew and frost?
- (2) Are fluctuations in temperature at night due to ascending and descending currents of air?
- (3) How does the color of the soil affect the amount of frost formed?
- (4) What effect does a covering of vegetation over the ground have upon its temperature and the amount of frost deposited?
- (5) What are the sources of that moisture which forms as dew and frost, and how much does each contribute?
- (6) What is the effect of smudging, flooding, cultivating, etc., upon the formation of frost?
- (7) How far does the temperature fall on clear, still nights below the dew-point as determined in the late afternoon or early evening?

I have been at work upon suitable experiments and observations during the past two years, but failed to secure many definite results on account of the complexity of the problems and the impossibility of eliminating nonrelated causes and effects. However, I desire to report what little I have accomplished.